

Stated Meeting, February 6.

Present, thirty-five members.

Dr. CHAPMAN, President, in the Chair.

Letters were received and read:—

From the Academy of Arts and Sciences, Boston, dated January 31, 1846, enclosing a report of a Committee of the Academy, calling the attention of this Society to the subject of Meteorological Observations in North America, and suggesting some alterations and improvements in the present system:—

From the Imperial Society of Naturalists of Moscow, dated Sept. 11, 1845, announcing the transmission of some numbers of the Bulletin of that Society:—

From the Society of Natural History in the Mauritius: and,
From Baron Von Hammer Purgstall, dated Vienna, Feb. 8, 1845, informing the Society that he had sent to it, as a donation, a set of the Vienna Review, for 1844, and another work.

The following donations were announced:—

FOR THE LIBRARY.

Bulletin de la Société Impériale des Naturalistes de Moscou. Tome XVIII. Année 1845. Nos. 2 and 3. Moscou, 1845. 8vo.—

From the Society.

Annual Report of the Trustees of the State Library. Albany, Jan. 9, 1846. 8vo.—*From the Trustees.*

Jahrbücher der Literatur. January to December, 1844. Vienna. 8vo.—*From Baron Von Hammer Purgstall.*

Zeitwarte des Gebeles in Sieben Tageszeiten. Ein Gebetbuch, Arabisch und Deutsch. Herausgegeben von Hammer Purgstall. Wein, 1844. 12mo.—*From the Author.*

The Medical News and Library. Vol. IV. Feb. 1846. No. 38. 8vo.—*From Messrs. Lea & Blanchard.*

Address delivered at the University of Pennsylvania, before the Philomathean Society, May 23d, 1845. By Henry D. Gilpin. 8vo.
From the Author.

ADDITION TO THE LIBRARY BY PURCHASE.

Astronomische Nachrichten. No. 550, and Supplement. 4to.

Mr. Nulty read a paper "On the Determination of Azimuths in a Geodesical Survey, from a Series of Observations of Polaris."

This star, when towards its maximum elongation from the meridian of a station, has been found to give more consistent and uniform results than observations of the *sun*, and should therefore be exclusively preferred at all geodesical stations, which require a high degree of accuracy in their respective bearings. The principal data employed in the computation of an azimuth, chiefly depend on the instrument used by the observer. With the repeating circle, a number of angular distances forming a series may be taken vertically, between the star, near its greatest eastern or western elongation, and a corresponding signal placed in the horizon; or a like series of horizontal angles may be observed by means of a theodolite. Both modes of observation will lead to accurate results; but when the star is viewed successively near its greatest eastern and also near its greatest western elongation from the meridian of the station, so as to guard against imperfection in the instrument, the latter is preferred as having superior advantages. This mode of observing Polaris has been lately adopted in the U. S. Coast Survey, by its present superintendent. It must give to the azimuthal bearings of that extensive work every requisite precision. The brief notice here taken will enable the mathematician to form a sufficient idea of the problem of azimuths by Polaris, as considered by the author of the paper now under report. The several instants of observation with the elongations of the star, and the known latitude of the station, are the essential elements of solution; but, instead of introducing them into the usual general expressions for azimuths, which in case of one or several series would be attended with excessive labour, the author employs special formulæ immediately bearing on the observed positions of the star, and by which the practical computation of azimuths by Polaris, is reduced to almost the same facility as that of latitude. It is hardly necessary, in a summary of this nature, to describe minutely the character of the formulæ investigated in the paper. They correspond in general to three positions of Polaris, taken as an origin or mean instant of a series; the *first* being the time of maximum elongation, the *second* involving a horary angle of six hours from the meridional passages at the station, and the third referring to a more general position of the star, not, however, far distant from its plane at greatest elongation. In a mathematical sense, they have each

some analytical advantage; and an expert computer will use them and their adjunct differential expression with equal facility in reference to the mean instant of his data. The author appears to have had considerable experience in testing their practical application, and from such, gives a partiality to his leading formulæ, as connected with the more favourable position of the star, and as having brevity and easy recollection to recommend them. In concluding his paper, he mentions "Puissant Geodesie," (edition of 1842,) and Strune's Gradmessing, as standard writers in France and Germany, on these and similar subjects. He regretted not having the advantage of seeing these works, and referred to them only through a notice of Prof. A. D. Bache, Superintendent of the Coast Survey, who has sent to him a short transcript of two formulæ (one from each work), which are different from those forming the principal objects of his paper, and which must be seen in their respective authors, to seize their application and their presumed advantage.

Professor J. C. Cresson gave a brief account of the demolition of Mr. Paul Beck's shot tower, in the western part of the city. The height of the structure was about 160 feet, and the walls six feet in thickness at the base.

The walls were cut away near the base on the whole of the northern side, and partly on the eastern and western, the parts thus undermined being temporarily supported by shores of timber. When the undermining was completed, an unsuccessful attempt was made to remove the shores by means of gunpowder; and while the workmen were preparing a second charge of powder, the base of the building was suddenly protruded toward the south, and the whole fabric crumbled into fragments, collapsing, as it were, upon its own base, and the ruins occupying but little more ground area than the original structure.

The following communication, relating to observations made at the Washington and Philadelphia High School Observatories, on the two Biela comets, was brought before the Society, by Dr. Patterson.

Washington, D. C. Feb. 5, 1846.

DEAR SIR,—I send you the measures of the position and distance of the two Biela comets, made at the Washington and High School Observatories. The angles of position are measured from the north round the circle eastward. The time is mean time, Washington Observatory. The results are as yet only approximate, not having been rigorously computed.

DATE.		Observatory.	Position B from A.	Distances.	Brilliance of B in parts of A.
January	14d 6h 51m	Wash.	322.4 ^o	98."	0.2
	18 6 46	"	325.0	130.	0.3
	19 6 38	"	325.5	131.	0.3
	22 7 1	"	325.8	145.	0.4
	22 7 45	Phila.	330.0	145.	0.4
	23 7 1	Wash.	327.8	147.	0.4
	24 7 23	"	326.4	152.	0.5
	24 7 27	Phila.	329.1	152.	0.5
	26 6 35	Wash.	327.7	156.	0.6
	28 6 47	"	330.0	169.	0.7
28 6 27	Phila.	329.6	178.	0.7	
February	4 6 39	Wash.	333.5	221.	0.7

B is the fainter comet. Both A and B have a condensation of light in the centre of their nebulosities. Both have a tail extending from the comet opposite the sun about 4'. Both the nebulosities when the moonlight is absent, seem to blend very faintly at their outer border.

The above descriptions and measures are furnished with the consent of Messrs. Maury and Kendall.

I submit, with some hesitation, an opinion respecting these singular objects.

In a period of 21 days of observation, the difference in place of each from that of Santuri's Ephemeris of the Biela comet is quite uniform, in traversing an arc of 15° of apparent motion in the heavens. Hence they would seem to be components of Biela's comet.

The objects are so indefinite in their shape that you will notice a great discrepancy in the measured positions and distances. By taking an average of several consecutive evenings, except for the 4th of February, which depends on one night's work, I find the following results:—

	B from A Position.	Daily increase.	B from A Distance.	Daily increase.	Log. dist. comet from earth	B from A in parts of earth's mean distance foreshortened.	Daily increase.
Jan. 18.d79	325°.2	+0°.58	130"	+4".0	9.8783	0.0004762	+0.0000106
23.d28	327°.8	+0°.40	148"	+5".3	9.8634	0.0005238	+0.0000105
28.d28	329°.8	+0°.53	174"	+5".3	2.8346	0.0005764	+0.0000116
Feb. 4.d28	333°.5		211"		9.8082	0.0006578	

From these data it would seem that the apparent secondary revolution of B round the common centre of gravity of B and A is at the rate of about one half a degree per day, and the foreshortened daily departure of B from A in space, is about 1000 miles, and that so far, the revolution round each other, and the increase of distance asunder, are nearly uniform.

I am quite unable to give any theoretical explanation of the phenomenon.

Yours, truly,

S. C. WALKER.

To Prof. A. D. BACHE, LL.D.

Prof. A. D. Bache made some remarks on the progress of the coast survey, under his superintendence, and illustrated them by a number of diagrams.

On motion of Dr. Elwyn, the letter from the American Academy of Arts and Sciences was referred to a committee, consisting of Dr. Emerson, Mr. Charles M' Ewen, and Prof. Cresson.

Stated Meeting, February 20.

Present, seventeen members.

Dr. CHAPMAN, President, in the Chair.

A letter was announced and read:—

From the American Academy of Arts and Sciences, dated Boston, Feb. 8, 1846, inviting the coöperation of the American Philosophical Society, in a petition to Congress, to print an additional number of copies of the Reports of the U. S. Exploring Expedition.

The communication was referred to a Committee, consisting of Dr. Elwyn, Prof. Frazer, and Dr. Patterson.

The following donations were announced:—

FOR THE LIBRARY.

Proceedings of the Geological Society of London. With Plates in illustration of the Papers abstracted. Session 1844—45. Vol. IV. No. 104. Part 3. 8vo.—*From the Society.*